

$\Lambda_c(2625)^+$ $I(J^P) = 0(\frac{3}{2}^-)$ Status: ***

The spin-parity has not been measured but is expected to be $3/2^-$:
 this is presumably the charm counterpart of the strange $\Lambda(1520)$.

 $\Lambda_c(2625)^+$ MASS

The mass is obtained from the $\Lambda_c(2625)^+ - \Lambda_c^+$ mass-difference measurements below.

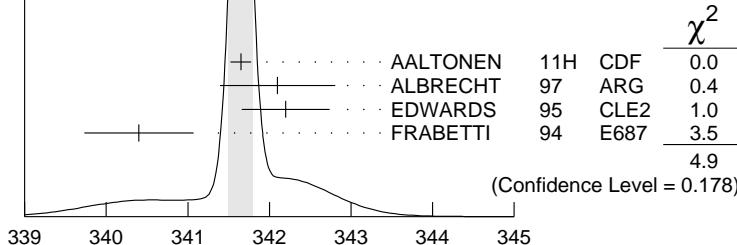
VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
2628.11 ± 0.19 OUR FIT		Error includes scale factor of 1.1.		
• • • We do not use the following data for averages, fits, limits, etc. • • •				
2626.6 ± 0.5 ± 1.5	42 ± 9	ALBRECHT	93F ARG	See ALBRECHT 97

 $\Lambda_c(2625)^+ - \Lambda_c^+$ MASS DIFFERENCE

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
341.65 ± 0.13 OUR FIT		Error includes scale factor of 1.1.		
341.65 ± 0.15 OUR AVERAGE		Error includes scale factor of 1.3. See the ideogram below.		
341.65 ± 0.04 ± 0.12	6.2k	AALTOMEN	11H CDF	$p\bar{p}$ at 1.96 TeV
342.1 ± 0.5 ± 0.5	51	ALBRECHT	97 ARG	$e^+ e^- \approx 10$ GeV
342.2 ± 0.2 ± 0.5	245 ± 19	EDWARDS	95 CLE2	$e^+ e^- \approx 10.5$ GeV
340.4 ± 0.6 ± 0.3	40 ± 9	FRABETTI	94 E687	$\gamma Be, \bar{E}_\gamma = 220$ GeV

WEIGHTED AVERAGE
 341.65 ± 0.15 (Error scaled by 1.3)

Values above of weighted average, error, and scale factor are based upon the data in this ideogram only. They are not necessarily the same as our 'best' values, obtained from a least-squares constrained fit utilizing measurements of other (related) quantities as additional information.

 $m_{\Lambda_c(2625)^+} - m_{\Lambda_c^+}$ **$\Lambda_c(2625)^+$ WIDTH**

VALUE (MeV)	CL%	EVTS	DOCUMENT ID	TECN	COMMENT
<0.97	90	6.2k	AALTOMEN	11H CDF	$p\bar{p}$ at 1.96 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<1.9	90	245 ± 19	EDWARDS	95 CLE2	$e^+ e^- \approx 10.5$ GeV
<3.2	90		ALBRECHT	93F ARG	$e^+ e^- \approx \Upsilon(4S)$

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$\Lambda_c(2625)^+$ DECAY MODES

$\Lambda_c^+ \pi \pi$ and its submode $\Sigma(2455)\pi$ are the only strong decays allowed to an excited Λ_c^+ having this mass.

Mode	Fraction (Γ_i/Γ)	Confidence level
$\Gamma_1 \Lambda_c^+ \pi^+ \pi^-$	[a] $\approx 67\%$	
$\Gamma_2 \Sigma_c(2455)^{++} \pi^-$	<5	90%
$\Gamma_3 \Sigma_c(2455)^0 \pi^+$	<5	90%
$\Gamma_4 \Lambda_c^+ \pi^+ \pi^-$ 3-body	large	
$\Gamma_5 \Lambda_c^+ \pi^0$	[b] not seen	
$\Gamma_6 \Lambda_c^+ \gamma$	not seen	

[a] Assuming isospin conservation, so that the other third is $\Lambda_c^+ \pi^0 \pi^0$.

[b] A test that the isospin is indeed 0, so that the particle is indeed a Λ_c^+ .

$\Lambda_c(2625)^+$ BRANCHING RATIOS

$$\Gamma(\Sigma_c(2455)^{++} \pi^-)/\Gamma(\Lambda_c^+ \pi^+ \pi^-) \quad \Gamma_2/\Gamma_1$$

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<0.08	90	EDWARDS	95	CLE2 $e^+ e^- \approx 10.5$ GeV

$$\Gamma(\Sigma_c(2455)^0 \pi^+)/\Gamma(\Lambda_c^+ \pi^+ \pi^-) \quad \Gamma_3/\Gamma_1$$

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<0.07	90	EDWARDS	95	CLE2 $e^+ e^- \approx 10.5$ GeV

$$[\Gamma(\Sigma_c(2455)^{++} \pi^-) + \Gamma(\Sigma_c(2455)^0 \pi^+)]/\Gamma(\Lambda_c^+ \pi^+ \pi^-) \quad (\Gamma_2 + \Gamma_3)/\Gamma_1$$

VALUE	CL%	EVTS	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					

<0.36 90 FRABETTI 94 E687 γ Be, $\bar{E}_\gamma = 220$ GeV

0.46 \pm 0.14 21 ALBRECHT 93F ARG $e^+ e^- \approx \Upsilon(4S)$

$$\Gamma(\Lambda_c^+ \pi^+ \pi^-$$
 3-body $)/\Gamma(\Lambda_c^+ \pi^+ \pi^-) \quad \Gamma_4/\Gamma_1$

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				

0.54 \pm 0.14 16 ALBRECHT 93F ARG $e^+ e^- \approx \Upsilon(4S)$

$$\Gamma(\Lambda_c^+ \pi^0)/\Gamma(\Lambda_c^+ \pi^+ \pi^-) \quad \Gamma_5/\Gamma_1$$

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<0.91	90	EDWARDS	95	CLE2 $e^+ e^- \approx 10.5$ GeV

$$\Gamma(\Lambda_c^+ \gamma)/\Gamma(\Lambda_c^+ \pi^+ \pi^-) \quad \Gamma_6/\Gamma_1$$

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<0.52	90	EDWARDS	95	CLE2 $e^+ e^- \approx 10.5$ GeV

$\Lambda_c(2625)^+$ REFERENCES

AALTONEN	11H	PR D84 012003	T. Aaltonen <i>et al.</i>	(CDF Collab.)
ALBRECHT	97	PL B402 207	H. Albrecht <i>et al.</i>	(ARGUS Collab.)
EDWARDS	95	PRL 74 3331	K.W. Edwards <i>et al.</i>	(CLEO Collab.)
FRABETTI	94	PRL 72 961	P.L. Frabetti <i>et al.</i>	(FNAL E687 Collab.)
ALBRECHT	93F	PL B317 227	H. Albrecht <i>et al.</i>	(ARGUS Collab.)

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